

**GOVERNMENT OF INDIA
EARTH SCIENCES
LOK SABHA**

STARRED QUESTION NO:360
ANSWERED ON:23.12.2008
PROGRESS IN EARTH SCIENCES RESEARCH
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Will the Minister of EARTH SCIENCES be pleased to state:

- (a) the details of the progress made in the field of research in earth sciences particularly relating to Tsunami in the country; and
- (b) the steps taken/proposed to be taken by the Government for speedy progress in this regard?

Answer

MINISTER OF SCIENCE AND TECHNOLOGY AND MINISTER OF EARTH SCIENCES (SHRI KAPIL SIBAL)

(a) to (b) : A Statement is laid on the Table of the House.

STATEMENT REFERRED TO IN REPLY TO PARTS (a) TO (b) OF THE LOK SABHA STARRED QUESTION NO 360 FOR ANSWER ON 23RD DECEMBER, 2008

(a-b) After the tsunami of 26th December 2004, the Government of India undertook a project on the Establishment of an Early Warning System for Tsunami and Storm Surges in Indian Ocean with the following components:

- # Installation of tsunami warning sensors close to the ocean bottom at appropriate locales in the Indian Ocean, with real time connectivity;
- # Tide gauge and data buoys networking to validate arrival of tsunami waves at the coast;
- # Strengthening of the existing seismological network to indicate, near real time occurrence of tsunamigenic earthquakes;
- # Modelling of the inundation scenarios for the entire coast and mapping of potential risk areas;
- # Setting up of a Warning Center to collect data/information, analysis and generating advisories related to earthquake and tsunamis.

An Early Warning System has been established at the Indian National Centre for Ocean Information Services (INCOIS), Hyderabad, Andhra Pradesh on 24x7 basis. This system was dedicated to the nation on 15th October 2007. The Centre receives near real time seismic signals for monitoring earthquakes capable of generating tsunamis, observes real time changes in the sea level and validates propagation of tsunami waves, if any, through bottom pressure sensors placed at sea bottom in the Bay of Bengal and the Arabian Sea. The system is capable to generate alert and warning advisories for tsunami.

Tsunami Model has been installed and different scenarios for the Indian Ocean for operational Tsunami forecast has been generated and stored into the Scenario Database. Modelling and progressive refining from data i.e. Bathymetry, coastal morphology by Airborne Laser Terrain Mapping (ALTM) is a continuous process. CARTOSAT-I data is used for the generation of Digital Terrain Model (DTM) for the Indian Coast. Fine resolution vulnerability map with all infrastructural details along with contours and threat levels for various tsunamigenic sources for the coastal regions of the country is going on. ALTM /Cartosat survey for the generation of high resolution coastal topography and land use maps is also going on.

The Early Warning Centre is generating and disseminating timely advisories to the Control Room of the Ministry of Home Affairs for further dissemination to the Public.

A state-of-the-art early warning centre has been established at INCOIS with all the necessary computational and communication infrastructure that enables reception of real-time data from all the sensors, analysis of the data, generation and dissemination of tsunami advisories following a standard operating procedure.